EFFECT OF DILTIAZEM UPON EPISODES OF SILENT MYOCARDIAL ISCHEMIA DURING DAILY LIFE

Pierre Théroux, M.D., F.A.C.C., Michael Baird, M.D., F.A.C.C., Martin Juneau, M.D., Wayne Warnica, M.D., F.A.C.C., Peter Klinke, M.D., F.A.C.C., William Kostuk, M.D., F.A.C.C., Peter Pflugfelder, M.D., F.A.C.C., Eric Lavallée, B.Sc., Christine Chin, B.Sc., Ellen Dempsey, M.Sc., Michael Grace, Ph.D., David Waters, M.D., F.A.C.C., Montreal Heart Institute, Montreal, Canada.

The efficacy of diltiazem to control silent myocardial ischemia was assessed in a multicenter, double-blind, placebo-controlled, crossover trial of 64 pts with stable coronary disease, a positive exercise test and more than 10 min of asymptomatic ST segment depression (↓ST) during a continuous 72 hour Holter screening period. Mean age was 59±8 years and 61 were men. Pts took no other anti-anginal drugs except nitroglycerin for symptoms. Holter recordings were repeated during the last 72 hours of 14 day treatment periods with long-acting diltiazem 120 mg bid or equivalent placebo. Tapes were analyzed blindly at a central lab on a Cardiodata Mark IV Trendsetter; all ↓ST was verified by visual inspection. Intra and interobserver variability was assessed in a randomly selected 20% of the tapes and determined to be minimal. Criteria for a silent ischemic episode were ↓ST ≥1 mV for ≥1 min, separated by ≥1 min of isoelectric ST, without symptoms.

	Placebo	Diltiazem	p
Ischemic episodes	5.6±3.0	2.8±3.1	<0.0001
Total ischemia (min)	117±100	65±89	<0.0001

The 50% reduction in ischemic episodes was of similar magnitude at night and during the day. Diltiazem eliminated all ↓ST in 10 pts, placebo in none.

Conclusion: diltiazem markedly decreases the number of episodes of silent myocardial ischemia during daily life.

SILENT ISCHEMIA INDUCED BY MENTAL AROUSAL IS NOT PREDICTED BY AMBULATORY ST SEGMENT MONITORING

John S. Gottdiener, M.D., F.A.C.C., David S. Krantz, Ph.D., Karin Helmers, BSN, Helene Lutz, MSN, Frances Gabbay, Ph.D., Mahmood Alikhan, M.D., F.A.C.C., Alan Rozanski, M.D., F.A.C.C. University of Maryland Hospital, Baltimore, MD and USUHS, Bethesda, MD.

Painless myocardial ischemia may occur in a variety of physiologic environments. Using 2D echo to analyze LV wall motion, we previously documented painless regional wall motion abnormality induced by laboratory mental arousal interventions (directed public speaking and paced mental arithmetic) at lower double-product thresholds than with bicycle exercise. To compare the relation between ischemia with mental stress and ST segment depression during daily activity, we performed 48° ambulatory ECG (Holter) in 15 men with CAD (av age 59±9 yrs) of whom 10 had new wall motion abnormality with public speaking or mental arithmetic. Holter ST depression for >60 sec (av 14.4±7.2 min) occurred in 6 (40%) pts of whom 4 had mental stress wall motion abnormality and 2 of these had ST depression with mental stress. Of 9 pts with negative Holter, 6 (67%) nonetheless had new wall motion abnormality, and 3 ST depression, with mental stress. The HR at onset of Holter ST depression (104±8 bpm) was greater ($p<.05$) than with onset of wall motion abnormality during mental stress (76±7 bpm). With exercise, new wall motion abnormality occurred in 4/6 pts with positive Holter and 5/9 pts with negative Holter ST depression. Conclusion: While ischemia during laboratory mental stress and daily activity overlap, the presence of one does not predict the other, indicating possible differences in pathophysiology.

EFFECTS OF ATENOLOL AND NIFEDIPINE ALONE AND IN COMBINATION ON AMBULANT MYOCARDIAL ISCHEMIA IN MINIMALLY SYMPTOMATIC PATIENTS.

Jose I. Gonzalez MD, James A. Hill MD F.A.C.C., Robert Kolb RN, Elizabeth Franco RN, Carl J. Pepine MD F.A.C.C., Univ of Fla, Gainesville, Fla

Effects of atenolol (A,100 mg/d) and nifedipine (N, 20 mg tid) and their combination (C) on ambulant myocardial ischemia were investigated using a randomized, double-blind, placebo (P) controlled, crossover trial in 18 men with coronary artery disease exercise-induced ischemia and minimal symptoms. Forty-eight hour FM ambulatory ECG monitoring was used and each patient had ≥10 minutes of ischemia (≥ 1 mm ST segment depression) during ambulant life (AMBIS) in order to qualify. Five treatment periods (2 placebo, 2 active monotherapy, and combination therapy) were each 2 weeks in duration.

RESULTS: Monotherapy reduced the frequency of AMBIS ($p<0.003$), 80% of which were silent, with both N and A compared to P (5.7±6.2 and 4.6±5.6 vs 9.9±7.7 episodes /48 hr period respectively) and AMBIS was eliminated in 8 patients using monotherapy. There was no difference between A and N in AMBIS frequency ($p=0.6$). In those patients with continued AMBIS on monotherapy, combination therapy eliminated it in 2 and reduced it (15.7±9 vs 7.3±5.8 episodes/48 hours) in the remainder when compared to P.

CONCLUSIONS: Considerable AMBIS may be present in minimally symptomatic patients and N and A are similarly effective in eliminating or reducing AMBIS. Combination therapy can provide additional benefit in those with continued ischemia.

Tuesday, March 20, 1990
4:00PM–5:30PM, Room 14
Color Flow Mapping II: Biophysical Factors Influencing Jet Size

COLOR DOPPLER FLOW MAPPING OF THE EPICARDIAL CORONARY ARTERIES; INITIAL OBSERVATIONS

Jayashri R. Aragam, MD, Joan Main, Luis J. Guerrero, BS, Gus J. Vlahakes, MD, Mark S. Adams, BS, Arthur E. Weyman, MD, FACC, Robert A. Levine, MD, FACC. Massachusetts General Hospital, Boston, MA

Echocardiographic imaging of epicardial coronary arteries has been suggested as a useful adjunct to their intraoperative evaluation. Addition of color Doppler flow mapping could potentially enhance this evaluation by displaying the flow distrubance produced by anatomic lesions whose physiologic significance may otherwise be uncertain. We therefore addressed the hypothesis that blood flow could be imaged by this technique in the coronary arteries and characteristic patterns described in normal and diseased vessels. Epicardial coronary arteries were examined in 6 open chest dogs with a high-resolution 7.5 MHz linear array transducer before and after creation of experimental stenosis and/or thrombosis. Limited studies were also performed in 5 patients during bypass surgery. RESULTS: 1) In all six dogs, the proximal left coronary arteries showed homogeneous unaliased flow. 2) Flow patterns generated by stenotic lesions had several recognizable features, including aliasing, velocity variance and eccentric post-stenotic jets, preferentially adherent to walls with distal reexpansion. In some, recirculation was also noted as low velocity reverse flow. Preliminary patient studies, although limited by access and time, revealed similar flow distrubances in 2 patients and visualized flow at 2 anastomotic sites. CONCLUSION: Blood flow in the epicardial left coronary arteries can be successfully imaged by color Doppler flow mapping and characteristic flow patterns can be described in normal and diseased vessels.